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AN IMPROVED OVIPOSITION CAGE FOR MOTHS OF THE EUROPEAN CORN BORER

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The oviposition cage herein described (fig. 1) was developed in connection with quantity production of egg masses of the European corn borer (Pyrausta nubilalis (Hbn.)), for the manual infestation of corn being tested for resistance to this insect. The cage is simple in construction, light in weight, easy to handle, and readily cleansed. The sheets of wax paper on which the egg masses are deposited can be quickly removed from the top of the cage and replaced with fresh paper, and drinking water for the moths can be provided by spraying moisture onto the netting around the cage. The general principle of the cage structure and its utility were devised by Questel 1/ and used successfully by him for some time in the production of corn borer egg masses for insecticide tests.

The present cage is 22 inches long, 11 inches wide, and 11 inches high. The top and sides are constructed of 4-mesh galvanized hardware cloth, and the bottom of 14-mesh galvanized wire screen. It is preferable to purchase these materials in 2- or 3-foot widths to avoid wastage.

Several methods of constructing the cage have been tried. The most satisfactory has been to cut a strip of hardware cloth 22 by 33 inches and bend it crosswise in two places 11 inches apart to provide the top and two sides of the cage. Two pieces of the hardware cloth, each 11 inches square, are then cut for the ends and secured to the edges of the sides and top of the cage by small loops of twisted wire spaced an inch or two apart. The botton is constructed separately of a wooden frame 11 by 22 inches made of 5/8- by 3/8-inch material across which is tacked a piece of 14-mesh wire screen. The bottom is then inserted screen side up into the open portion of the hardware-cloth framework and fastened in place with double-pointed tacks. An opening approximately 3 inches square is cut near the center of one end of the cage, over which a wire-screen flap is fitted. The flap is made of a square piece of the hardware

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1/ Questel, D. D., Smith, L. E., and Vivian, D. L. Laboratory and field tests of toxicity of some organic compounds to the European corn borer. U.S. Bur. Ent. and Plant Quar. E-557, 17 pp. 1941. [Processed.]

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cloth slightly larger than the opening and is covered on the inner side with 14-mesh wire screen held in place by folding it back over the edges of the flap. It is hinged at the top, just above the opening, with two small loops of wire and held flat against the cage by a bent paper clip inserted through its lower edge and into the wire of the cage. This end opening provides for the insertion of a metal funnel through which the moths may be introduced.

A piece of white mosquito netting, preferably of the reinforced type, is cut 67 inches long and 11 inches wide. This is placed around the sides and ends of the cage and sewed onto the wire with heavy thread along all edges. A square is then cut out of the netting to accommodate the screened flap at the one end of the cage, and the edges of the netting around the opening are sewed to the wire of the cage. It is essential that the netting be well fitted to the cage at all points, as moths may escape through the meshes of the hardware cloth at any exposed places.

Two sheets of wax paper, each 6 by 24 inches, are laid lengthwise on the hardware-cloth top of the cage, the sheets overlapping slightly along their longitudinal inner edges and so adjusted that no open space occurs along their outer edges. The paper is held in place and in conformity with the wire top by laying over it a piece of ozite rug pad 11 by 24 inches. The moths deposit their egg masses through the meshes of the hardware cloth onto the under surface of the paper.

Cages so prepared and stocked with moths can be stacked on top of one another. Twice each day, in the morning and late evening, the rug pad is removed from the top of a cage, the two sheets of wax paper with the adhering egg masses are exchanged for two fresh pieces, and the pad is replaced. During this process a few moths occasionally escape through the meshes of the hardware-cloth top of the cage. However, the activity of the moths which enables them to escape may be largely prevented by spraying the netting around the cage with water just before exchanging the wax papers. In fact, spraying of the cages in this manner at least twice a day is advisable.

The number of moths that can be confined efficiently in a cage of this type is variable. In 1944 on an average 18.8 egg masses per female moth were obtained from 11 cages when 100 females and an equal number of males were confined per cage, and an average of 12 masses per female from 7 cages, each of which confined 200 females and 150 to 200 males. A maximum of 25.5 egg masses per female moth were procured from 1 of the cages containing 100 moths of each sex. Too much crowding of the moths decreases the production of eggs per moth. The oviposition cages are usually held in a room-size incubator at a controlled temperature of 80° F., and in an atmosphere of 80 to 90 percent relative humidity. After a cage has been used, the dead moths are shaken or brushed out through the end opening or removed with an electrical vacuum apparatus. The cage is sterilized by dipping in a vat of dilute formaldehyde.

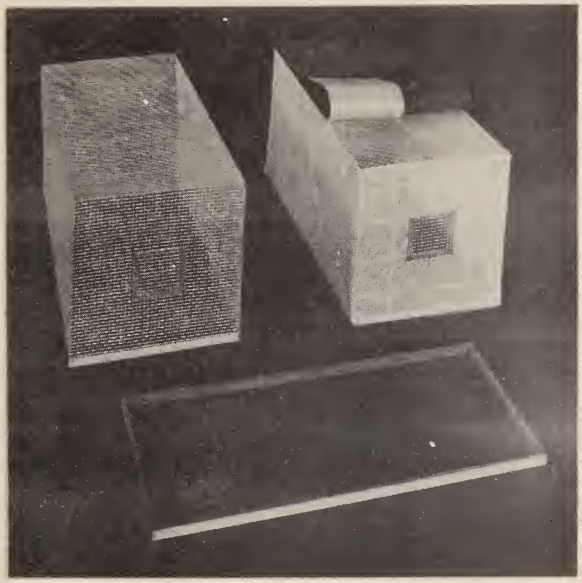

Figure 1.—Improved oviposition cage for moths of the European corn borer. The cage on the left illustrates the general construction of hardware cloth, with screened bottom attached. In the foreground a screened bottom is shown separately. The cage on the right is complete with netting, wax papers, and piece of rug pad. The pad and one sheet of paper are rolled back to show method of exposing the paper to the moths. The flap covering the end opening appears on both cages.

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